

July 26, 2000

Mr. Mark E. Warner  
Vice President, TMI Unit 1  
AmerGen Energy Company, LLC  
Three Mile Island Nuclear Station  
PO Box 480  
Middletown, Pennsylvania 17057-0480

SUBJECT: THREE MILE ISLAND - NRC INSPECTION REPORT 05000289/2000-004

Dear Mr. Warner:

On July 1, 2000, the NRC completed an integrated inspection at your Three Mile Island Unit 1 reactor facility. The enclosed report presents the results of that inspection which the resident inspectors discussed with you and other members of your staff on July 7, 2000.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rule and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC identified two findings that were evaluated under the significance determination process and were determined to be of very low safety significance (Green). These issues have been entered into your corrective action process and are discussed in the summary of findings and in the body of the enclosed inspection report. One of the issues was determined to involve a violation of NRC requirements, but, because of the very low safety significance, the violation is not cited. If you contest this non-cited violation, you should provide a response within 30 days of this inspection report, with the basis for your denial, to the US Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, US Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Three Mile Island facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Mr. M. Warner

2

We appreciate your cooperation. Please contact me at (610) 337-5146 if you have any questions regarding this letter.

Sincerely,

**/RA/**

John F. Rogge, Chief  
Projects Branch 7  
Division of Reactor Projects

Docket No.: 05000289  
License No.: DPR-50

Enclosure: NRC Inspection Report No. 05000289/2000-004

cc w/encl:  
PECO Energy Company - Correspondence Control Desk  
TMI-Alert (TMIA)  
D. Allard, PADER

Distribution w/encl (VIA E-MAIL):

Region I Docket Room (with concurrences)

NRC Resident Inspector

H. Miller, RA

J. Wiggins, DRA

J. Rogge, DRP

N. Perry, DRP

A. Della Grecca, DRS

C. Cahill, DRS

C. O'Daniell, DRP

J. Shea, OEDO

E. Adensam, PD1, NRR

S. Black, NRR

T. Colburn, NRR

A. Dromerick, NRR

W. Scott, NRR

DOCUMENT NAME: C:\TMI2000004.wpd

After declaring this document "An Official Agency Record" it **will** be released to the Public.

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RI/DRP		RI/DRP		/				
NAME	CSmith		JRogge						
DATE	07/26/00		07/26/00		07/ /00		07/ /00		07/ /00

OFFICIAL RECORD COPY

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION 1**

Docket No.: 05000289  
License No.: DPR-50

Report No.: 2000-004

Licensee: AmerGen Energy Company, LLC (AmerGen)

Facility: Three Mile Island Station, Unit 1

Location: PO Box 480  
Middletown, PA 17057

Dates: May 14, 2000 through July 1, 2000

Inspectors: Douglas A. Dempsey, Acting Senior Resident Inspector  
Neil S. Perry, Senior Project Engineer  
Craig W. Smith, Resident Inspector  
Aniello L. Della Greca, Senior Reactor Inspector, DRS  
Frank J. Arner, Reactor Inspector, DRS  
Leonard M. Cline, Reactor Inspector, DRS  
Lois M. James, Reactor Inspector, DRS  
Chris G. Cahill, Reactor Inspector, DRS

Approved by: John F. Rogge, Chief  
Projects Branch 7  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000289-00-05; on 5/14-7/1/2000; AmerGen Energy Company, LLC; Three Mile Island, Unit 1; Personnel Performance During Nonroutine Plant Evolutions and Events, Permanent Plant Modifications.

The report covers a seven-week period of resident inspection and an announced inspection by a regional engineering inspection team. The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process (SDP) in Inspection Manual Chapter 0609 (see Attachment 1).

### Cornerstone: Mitigating Systems

- **Green** - While restoring from a scheduled outage on the A train of the building spray system, operators inadvertently left open a vent valve on the sodium hydroxide tank supply line. Water drained from the sodium hydroxide tank into the auxiliary building sump, resulting in an unplanned entry into a Technical Specification (TS) limiting condition for operation. The issue had very low safety significance because operators took prompt action to isolate the open drain path, and the level in the sodium hydroxide tank was restored within the TS allowed outage time. This was considered a minor violation. (Section 1R14)
- **Green** - A non-cited violation was identified in that AmerGen did not establish an adequate test procedure to periodically verify the operability of a recently modified letdown system isolation valve closure circuit. The modified circuit performs a safety function and, as such, required periodic testing. Failure to establish an adequate testing program is a violation of 10 CFR 50, Appendix B, Criterion XI, "Test Control." The inspectors determined that the safety significance of this issue was very low because: (1) post-installation testing of the modified circuit verified that it would function as designed; and, (2) periodic verification of the functionality of similar circuits is normally performed during refueling outages. AmerGen entered this issue into its corrective program. As such, this issue was treated as a non-cited violation. (Section 1R17.2)

### Cross-cutting Issues: Human Performance Problems

- **No Color** - The inadvertent draindown of the sodium hydroxide tank and unplanned entry into a Technical Specification limiting condition for operation represented a continued recurrence of very low safety significant human performance errors in Operations and indicates that corrective actions for resolving some prior human performance issues were not totally effective. (Section 4OA4)

## Report Details

### Summary of Plant Status

AmerGen Energy Company, LLC (AmerGen) operated Three Mile Island Unit 1 (TMI) at 100 percent power throughout the inspection period.

## **1 REACTOR SAFETY**

### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

#### **1R02 Evaluations of Changes, Tests, or Experiments**

##### **a. Inspection Scope**

The inspectors reviewed the safety evaluations (SEs) listed below. The review was conducted to verify that changes to the facility or procedures described in the Updated Final Safety Analysis Report (UFSAR) were reviewed and documented by the licensee in accordance with 10 CFR 50.59. The inspectors selected the SEs from changes implemented during the last two years taking into consideration safety significance of the change, risk to the structures, systems, and components affected, and impact on the three reactor safety cornerstones. The inspectors also reviewed, as applicable, AmerGen's identification and resolution of problems related to SEs and associated changes.

SE 113202-887	Decay Heat Removal and Decay Heat Closed Cooling System Relief Valve Replacement - Modification MD-H168-001
SE 113202-758	Globe Valve Torque Switch Bypass Modification - Configuration Change Requests (CCRs) 00139972, 00139974, and 00139975
SE 113202-892	Makeup Pump Oil Leakage Elimination - MD-H308-001
SE 000741-004	Emergency Diesel Generator Engineered Safeguards Actuation System Test Modification - MD-H045-001
SE-000534-008	Plant FSAR Update (PFU) 98-TI-219
SE-000424-012	PFU for FSAR Section 10.6.2, Emergency Feedwater (EFW)
SE-000424-014	Technical Specification (TS) Bases Change for EFW Flow Capacity
SE-000244-003	PFU 98-TI-191, FSAR Revision Section 5.3.2

The inspectors also reviewed a sample of changes, tests and experiments, as listed below, for which AmerGen determined that a safety evaluation was not required. This review was performed to verify that AmerGen's threshold for performing safety evaluations was consistent with 10 CFR 50.59.

SE-113202-807	MD-G893-001, DW-V-0003 Controller Stability Improvements
SE-113202-852	MD-G977-001, River Water Systems Strainer Differential Pressure Switch Upgrade
SE-113202-922	MD-H476-001, Engineered Safeguards Actuation System (ESAS) Block Loading Timer Replacement
SE-123335-001	MD-A307-001, Replace Steam Line Insulation
SE-000211-025	Material Non-Conformance Report T1998-1079, MU-V-0104 Relief Valve Setpoint Incorrect
SE-000216-001	Engineering Change Document C308998, Decay Heat Removal and Core Flood Check Valve Testing System
SE-000642-009	ESAS Design Basis Document Change
SE-113202-668	CCR-95-046, Secondary River Pump, SR-P-1A/B/C, Redesign
SE-113202-744	MD-H007-001, Emergency Diesel Generators EG-P-4A/B Discharge Piping Modification
SE-113202-922	ESAS Block Loading Timer Replacement
SE-418800-001	Conversion of Reactor Coolant Pumps with Standard Seals to Cartridge Seals

b. Issues and Findings

There were no findings identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed partial system walkdowns of the direct current (DC) electrical distribution and two-hour emergency air systems. The inspectors reviewed operating and surveillance procedures, and equipment alignment and material condition. System operating parameters were verified to be consistent with current plant conditions. The inspectors sampled AmerGen's corrective action process to verify problems concerning the DC electrical distribution and two-hour emergency air systems were being identified and resolved at an appropriate threshold.

b. Issues and Findings

There were no findings identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors conducted fire protection inspections for the following areas:

- Auxiliary Building - emergency core cooling system pump rooms and vaults
- Diesel Generator Building
- Auxiliary Transformers

The inspection activities consisted of plant walkdowns and a review of AmerGen's fire protection program documentation for the inspected areas. The plant walkdowns included observations of combustible material control, fire detection and suppression equipment availability, and compensatory measures.

b. Issues and Findings

There were no findings identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the design features of the TMI facility for protection against both internal and external flooding. The inspection activities included a review of the design documentation for the flood protection measures and in-plant and outside walkdowns to verify that the credited flood protection measures were properly installed and maintained.

b. Issues and Findings

There were no findings identified.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

The inspectors observed a simulator training session for a crew of licensed reactor and senior reactor operators. The inspectors assessed licensed operator performance during the drill scenario and the evaluator's critique at the end of the training session.

b. Issues and Findings

There were no findings identified.

1R12 Maintenance Rule Implementation

.1 Engineered Safeguards Actuation System Relays

a. Inspection Scope



The inspector reviewed performance of the Engineered Safeguards Actuation System (ESAS) relays to assess AmerGen's compliance with the NRC Maintenance Rule (10 CFR 50.65) for this system. The system has been classified as Maintenance Rule category a(1), requiring improvement, since December 1998 due to ESAS relay component functional failures. The inspector reviewed a May 12, 2000, functional failure of an ESAS relay and discussed with engineering personnel the plans for improving performance of the ESAS relays. The May 2000 failure had a different root cause than the earlier failures; therefore, the proposed corrective actions were appropriately different.

b. Issues and Findings

There were no findings identified.

.2 Auxiliary Transformers

a. Inspection Scope

The inspector reviewed performance of the station auxiliary transformers to assess AmerGen's compliance with the NRC Maintenance Rule for this system. The system has been in Maintenance Rule category a(1), requiring improvement, since January 2000 due to a maintenance preventable functional failure that resulted in an inadvertent trip of the A auxiliary transformer and an automatic start of the B emergency diesel generator. The inspector reviewed AmerGen's corrective actions, both taken and planned, to improve system performance and sampled the corrective action process to verify problems concerning the auxiliary transformers were being identified and resolved at an appropriate threshold.

b. Issues and Findings

There were no findings identified.

.3 Condenser Air Removal System

a. Inspection Scope

The condenser air removal system is classified as Maintenance Rule category a(2). The inspector reviewed system performance monitoring and goals, health reports, preventive and corrective maintenance records, and discussed the system with the cognizant engineer to verify that there was reasonable assurance that the system was able to perform its scoped function.

b. Issues and Findings

There were no findings identified.

1R13 Maintenance Risk Assessment

a. Inspection Scope

The inspector observed AmerGen's control of maintenance activities involving desilting the river water pump house intake structure. The work was conducted by an outside diving contractor. The inspector reviewed the on-line maintenance risk document and job order for the work activities to be performed and observed the conduct of maintenance in the field.

b. Issues and Findings

There were no findings identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions and Events

a. Inspection Scope

The inspector reviewed operator performance during an inadvertent draindown of the building spray system sodium hydroxide tank while restoring the system from a scheduled outage.

b. Issues and Findings

The inspector reviewed an event of minor significance where operators failed to properly follow a procedure, resulting in the inadvertent lowering of sodium hydroxide solution level. Sodium hydroxide is injected into the building spray system flow path following a large break loss of coolant accident to remove fission products from the containment atmosphere to limit the amount of fission products available for leakage to the environment. Sodium hydroxide is also used for pH control of the post accident recirculating sump water for long term corrosion control of safety related components. Technical Specification (TS) 3.3.1.3.b requires the level in the sodium hydroxide tank be maintained eight feet plus or minus six inches lower than the level in the borated water storage tank (BWST) to perform these functions.

On May 18, 2000, while restoring the A train of the building spray system from a scheduled outage, operators inadvertently drained six inches of level from the sodium hydroxide tank into the auxiliary building sump resulting in an unplanned entry into the TS limiting condition for operation (LCO) for sodium hydroxide tank / BWST differential level. TS 3.3.1.3.b allows 72 hours to restore differential level to the required band. Operators restored the sodium hydroxide tank level into the required band in 30.65 hours.

AmerGen identified the cause of the inadvertent sodium hydroxide tank drain down to be failure of the operators to comply with Administrative Procedure (AP) 1002, Rules for the Protection of Employees Working on Electrical and Mechanical Apparatus. Specifically, the system restoration valve line-up did not include steps to shut a vent valve that had been opened as part of the isolation boundary for work on the building spray pump. When the sodium hydroxide tank outlet isolation valve was opened to restore the building spray system to operation, the contents of the tank drained through the open vent valve into the auxiliary building sump. AP 1002 requires operators to ensure the restoration valve line-up includes all valves within the maintenance boundary

as necessary to reestablish system and component operability. AmerGen entered this event into the corrective action process (CAP) as 2000-0426.

The inspector determined that this event had very low safety significance (Green). Operators took prompt action to isolate the open drain path, and the level in the sodium hydroxide tank was restored within the TS allowed outage time.

TS 6.8, Procedures and Programs, requires written procedures be established, implemented and maintained in accordance with Regulatory Guide 1.33, Quality Assurance Program Requirements. Appendix A to Regulatory Guide 1.33 requires, among other items, written procedures be established for controlling maintenance activities and obtaining clearance to perform work. AmerGen's failure to comply with AP 1002, while restoring the sodium hydroxide tank to service, was considered to be a minor violation of TS 6.8 not subject to the formal enforcement process.

#### 1R15 Operability Evaluations

##### a. Inspection Scope

The inspector reviewed AmerGen's operability evaluation concerning a core flood tank level transmitter being found out of tolerance during routine calibration testing as documented in CAP 2000-0491.

##### b. Issues and Findings

There were no findings identified.

#### 1R17 Permanent Plant Modifications

##### .1 (Closed) LER 05000289/1998-011-01& -02: Thermo-Lag Fire Barrier Found Outside Approved Joint Design Arrangement.

##### a. Inspection Scope

On September 25, 1998, while implementing Thermo-Lag fire barrier corrective actions required by a May 22, 1998 Confirmatory Order, GPU Nuclear personnel, the licensee of record at that time, identified that a Thermo-Lag fire barrier did not have the required trowel-grade material applied to the joint. An extent of condition review was conducted which identified additional deficiencies. These deficiencies were documented in Attachment 1 to the Licensee Event Report (LER).

The inspector conducted an onsite review of GPU Nuclear's corrective actions described in the LER and concluded that they were reasonable. The inspector also walked down and reviewed a sample of the permanent plant modifications and found them to be complete.

##### b. Issues and Findings

There were no findings identified.

.2 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed selected portions of the permanent plant changes listed below.

MITIGATING SYSTEMS:

MD-H045-001, R0	Emergency Diesel Generator Engineered Safeguards Actuation System Test Modification
MD-G904-001, R0	Instrument Air Compressor 2A & 2B Discharge Isolation Valves Modification
MD-H227-001, R0	Decay Heat System Cross-Connect Vents Modification
MD-H243-001, R1	Nuclear Service River Water Pump 1A, 1B, and 1C Tube Stabilizer Installation
MD-H189-001, R0	Replacement of Reactor Building Emergency Cooling System Valves RR-V-11A, 11B, and 11C
MD-H440-001, R0	Engineered Safeguards Trip of the Non-Engineered Safeguards Nuclear Services River Pump
MD-H355-001, R1	Decay River Pump Replacement and Orifice Assembly Installation
MD-H520-001, R0	Engineered Safeguards Trip of Secondary River Water Pump, SR-P-1C
MD-H526-001, R0	Decay Heat Closed Cooling Water Chemical Injection Taps Modification
MD-G974-001, R0	High Temperature Isolation of Letdown Line Modification
C-1101-424-E610-062, R1	Emergency Feedwater Flow Requirements for Design Basis Accidents
C-1101-212-5450-040, R2	Borated Water Storage Tank Minimum Usable Volume
C-1101-531-5310-010, R2	Nuclear River Water System Performance
C-1101-411-5310-023, R1	Calculation, Main Steam Valves MS-V-16A-D Required Thrust

PCR 1-OS-98-0270	Procedure Change Request - Emergency Procedure 1202-37, Cooldown from Outside of the Control Room
PCR 1-MT-98-8538	Procedure Change Request - Surveillance Procedure 1302-5.17, Makeup Tank Level and Pressure Instrumentation

BARRIER INTEGRITY:

C-1101-411-5310-023, R1	Calculation - Main Steam System Valves MS-V-16A, MS-V-16B, MS-V-16C, and MS-V-16D Required Torque
-------------------------	---

EVENT INITIATORS:

MD-H019-001, R0	Reconfiguration of River Pump Lube Water Manifolds
MD-H308-001, R0	Makeup Pump Oil Leakage Elimination
MD-H476-001, R0	Engineered Safeguards Actuation System Block Loading Timer Replacement
C-1101-732-E510-008, R1	TMI-1 4160V Engineered Safeguards Bus 1D and 1E Degraded Grid Undervoltage Relay Setpoint Drift Analysis
EER 00157115, R0	Bar Rakes and Traveling Screens Setpoint Change
TERI -T1-99-0044, R0	Technical Evaluation Replacement Item, Undervoltage Relay
TERI -T1-99-0049, R1	Technical Evaluation Replacement Item - Replacement of Crosby Relief Valves

The inspectors selected the plant modifications from approved changes completed during the last two years. The selection was based on risk significance, impact on the three reactor safety cornerstones (initiating events, mitigating systems and barrier integrity), and representative activities from various engineering disciplines. These modifications included equivalency evaluations, setpoint changes, and design calculations, and involved a variety of normal, abnormal, and emergency plant procedures. The inspectors directed their review to selected portions of the design, implementation, post-modification testing, and closeout documentation. As appropriate, the inspectors held discussions with the responsible design engineers and other personnel familiar with the changes. These discussions addressed, in particular, the scope and extent of the changes, as well as AmerGen's identification and resolution of problems that initiated the changes. The inspectors also conducted field observations of selected installed modifications.

b. Issues and Findings

The inspectors identified that the test controls applied to containment isolation valves MU-V-002A, MU-V-002B and MU-V-003, in Modification No. MD-G974-001, Revision 0, did not conform to the requirements of 10 CFR 50, Appendix B, Criterion XI.

### Background

On April 15, 1997, as a result of inspection findings documented in NRC Inspection Report (IR) 50-289/96-201, the NRC informed General Public Utilities Nuclear (GPUN), the licensee of record at the time of the inspection, that the TMI licensing basis for pipe breaks included the postulation of a full diameter break in the letdown line between the containment penetration and the breakdown orifice. Therefore, the design of safety-related equipment in the affected areas should consider the environmental conditions resulting from such a break. Prior to that date, GPUN had assumed only a crack break in the letdown line and, hence, only minimal environmental changes in the auxiliary building. Because of its assumptions, GPUN had not evaluated the environmental qualification (EQ) requirements of the affected electrical equipment. Subsequently, on September 4, 1998, GPUN issued Technical Data Report (TDR) No. 1230. In this TDR, GPUN concluded that there was reasonable assurance of operability of the equipment in the affected areas. The NRC concluded that the TDR properly addressed the issue (IR 50-289/98-06).

Following issuance of the TDR, GPUN completed an EQ impact evaluation. Specifically, calculation No. C-1101-211-E540-078, "Gothic Analysis of Auxiliary Building EQ Environment from High Energy Line Breaks," identified several areas that would be subjected to a high-temperature/high-humidity environment if the postulated break was not isolated until the letdown isolation valves received an automatic closure signal on low pressurizer pressure. This condition would require the potential inclusion of additional components in the licensee's EQ program. The same calculation determined that a much milder environment could be achieved in most areas if the letdown line was isolated earlier, for example, on increasing line temperature. Based on its decision to modify the control logic of the letdown line isolation valves (MU-V-002A, MU-V-002B and MU-V-003) to achieve earlier closure, GPUN concluded that only two valves in the makeup system, MU-V-36 and MU-V-37, required inclusion in the EQ program. This conclusion was documented in Topical Report 124, dated April 8, 1999. The letdown isolation valve control logic changes were included in modification package No. MD-G974-001, Revision 0, and the two makeup system valves were included in the EQ program.

### Modification Review

The control logic modification installed temperature switch contacts in the closing circuits of the three letdown line isolation valves. The contacts operate in parallel with the safety injection isolation signals to close the valves on high letdown line temperature. In series with the temperature switch contacts, GPUN also installed a contact from local "Normal-Bypass" switches to permit calibration and testing of the temperature switches without closing the valves. The inspectors identified no concerns with the conceptual design or the quality classification of the modification. However, they did identify that GPUN had not:

1. established administrative controls on the proper use of the “Normal-Bypass” switch; and
2. revised the valve test procedures to include a periodic verification of the functionality of the new circuit.

### Problem Assessment

As stated previously, the conclusions of GPUN Topical Report 124 were based on the installation of the control logic changes that would initiate closure of the letdown line isolation valves on increasing line temperature rather than low pressurizer pressure. These changes would have assured the isolation of the break well before the loss of reactor coolant system inventory caused the environment in the auxiliary building to increase potentially beyond the design capabilities of the equipment contained therein. Therefore, the ability of the affected safety-related components to perform their required safety function relied on continuous functionality of the modified isolation circuit.

The inspectors verified that position of the “Normal-Bypass” switches was locally monitored each shift during normal operator rounds. However, GPUN had not developed appropriate guidance for assessing the impact on equipment operability when the high temperature isolation logic circuit was bypassed. GPUN also did not place limits on the length of time the logic circuit could be bypassed.

The inspectors determined that GPUN had performed an adequate post-modification test following the installation of the new circuits, but had not established appropriate procedures to functionally test the circuits on a periodic basis. Because the temperature switches are normally open and their calibration is conducted with the local “Normal-Bypass” switch in the bypass mode, the continued functionality of the entire circuit could not be assured.

The inspectors discussed these issues with the cognizant station personnel who initiated an electronic task tracking system item to evaluate the issue.

### Risk Determination

The inspectors did not question the operability or functionality of the circuit, because: (1) the licensee conducted a satisfactory post-modification in October 1999; (2) the circuit was not disturbed during the intervening period; and, (3) the functionality of that type of circuit is normally verified during refueling outages. Additionally, controls were in place to periodically verify the status of the “Normal-Bypass” switches. Therefore, this issue met the initial significance determination process (SDP) screening and is considered to be Green. CAP T2000-0501 was issued by the licensee to evaluate and track resolution of the issue.

10 CFR 50, Appendix B, Criterion XI, Test Control, requires, in part, that a program be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written procedures. The failure to develop an adequate procedure for periodic testing of the modified circuit is a violation of the above requirement. However,

this violation is considered a Non-Cited Violation (NCV), consistent with the current Enforcement Policy, based on its very low risk significance and because it is being tracked in the licensee's corrective action program. **(NCV 05000289/2000-004-01)**

#### 1R19 Post-Maintenance Testing

##### a. Inspection Scope

The inspectors reviewed the post maintenance testing procedures and the documentation of test results for the following maintenance activities:

- Installation of sealed circuit cards on the A and B auxiliary transformers fault pressure relays; and,
- Corrective maintenance on the safety-related 1A instrument air compressor and discharge valves.

##### b. Issues and Findings

There were no findings identified.

#### 1R22 Surveillance Testing

##### .1 Power Range Calibration

##### a. Inspection Scope

The inspector reviewed the surveillance testing conducted each shift to verify the power range nuclear instrument calibration. The inspector verified that the data was complete, met the procedure requirements, and the acceptance criteria were clear and consistent with supporting documentation. The inspector compared the data collected on June 13 and 14, 2000, against the requirements listed in Surveillance Procedure 1302-1.1, Power Range Calibration. This inspection activity included a review of the requirements for the testing and the assumptions made regarding the accuracy of the data.

##### b. Issues and Findings

There were no findings identified.

##### 2. Nuclear Service River Water Pump In-Service Testing

##### a. Inspection Scope

The inspector observed in-service testing (IST) of the nuclear service river water (NSRW) system conducted on May 31, 2000, in accordance with Surveillance Procedure 1300-3I, IST of NSRW Pumps and Valves. The inspector compared the surveillance procedure against the requirements of the licensee's NRC approved IST



program and verified the testing was conducted in accordance with the approved test procedure.

b. Issues and Findings

There were no findings identified.

3. Reactor Protection System Calibration Testing

a. Inspection Scope

The inspector observed calibration testing of the D channel of the reactor protection system (RPS) conducted on June 29, 2000, in accordance with Surveillance Procedure 1303-4.1D, RPS Channel D Test. The inspector compared the results with the previous performances of the calibration test procedure.

b. Issues and Findings

There were no findings identified.

**4 OTHER ACTIVITIES**

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspector reviewed AmerGen's performance indicator (PI) data submitted for the initiating events cornerstone.

b. Issues and Findings

The inspector verified the PI data submitted by AmerGen for unplanned scrams per 7,000 critical hours, scrams with loss of normal heat removal, and unplanned power changes per 7,000 critical hours. The inspector reviewed plant operator logs and licensee event reports for the previous 12 quarters in conducting this review. The inspector found no problems with the PI accuracy or completeness.

4OA3 Event Follow-up

- .1 (Closed) LER 50-289/00-001: Automatic Start of Emergency Diesel Generator 1B Due to Failure of Fault Pressure Relay Circuit Card on Auxiliary Transformer 1A. The auxiliary transformer relay failure and operator response to this event were discussed in NRC Inspection Report 50-289/1999-011. AmerGen's Maintenance Rule evaluation of the circuit card failure is discussed in Section 1R12 of this report. This LER pertained to a minor issue and was closed during an onsite review.
- .2 (Closed) LER 05000289/1998-011-01& -02: Thermo-Lag Fire Barrier Found Outside Approved Joint Design Arrangement. These LERs are discussed in Section 1R17 of this report. These LERs pertained to minor issues and were closed during an onsite review.

4OA4 Cross-Cutting Issues

Human Performance Problems

a. Scope

The inspector reviewed control room operator performance during the inadvertent draindown of the sodium hydroxide tank while restoring the system to service following planned maintenance.

b. Issues and Findings

The inspector noted poor human performance by operations shift management in restoring the sodium hydroxide tank to service following planned maintenance. (Section 1R14) Specifically, the restoration valve line-up for returning the system to service was informally documented. Two valves were left out of their required closed position resulting in an inadvertent draindown of the sodium hydroxide tank and an unplanned entry into a Technical Specification limiting condition for operation. AmerGen entered this event into the corrective action process (CAP 2000-0426).

No color was assigned to this issue due to the very low safety significance. However, this event was of concern due to the continued recurrence of very low safety significant human performance errors in Operations and indicates that corrective actions for resolving some prior human performance issues were not totally effective.

4OA6 Management Meetings

.1 Exit Meeting Summary

On July 7, 2000, the resident inspectors presented the inspection results to Mr. Warner and other members of licensee management.

The engineering inspection team presented its inspection results to Mr. Limpas and other members of AmerGen management at the conclusion of the inspection on May 19, 2000. Following the inspection, on June 21, 2000, the team discussed with Mr. Cotton and other members of licensee management, the results of its further review of the letdown line modification.

The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

### PARTIAL LIST OF PERSONS CONTACTED

#### Licensee

J. Cotton, Vice President, TMI  
 M. Warner, Vice President, TMI (Incumbent)  
 R. Fraile, Plant Manager  
 D. Atherholt, Director - Operations  
 M. Ross, Director - Work Management  
 O. Limpas, Director - Site Engineering  
 G. Skilman, Director Plant Engineering  
 A. Asarpota, Manager - Modifications  
 M. Kapil, Manager - Electrical Power and Instrumentation  
 J. Telfer, Director Radiation Health & Safety  
 E. Fuhrer, Manager Regulatory Licensing  
 A. Miller, Regulatory Licensing

### ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened/Closed

2000-004-01	NCV	Failure to Establish an Adequate Testing Procedure for Letdown Line Modification
-------------	-----	--

#### Closed

1998-011-01 & -02	LER	Thermo-Lag Fire Barriers Found Installed Outside Joint Arrangement
2000-001	LER	Automatic Start of Emergency Diesel Generator 1B Due to Failure of Fault Pressure Relay Circuit Card on Auxiliary Transformer 1A

**LIST OF ACRONYMS USED**

AmerGen	AmerGen Energy Company, LLC
AP	Administrative Procedure
BWST	Borated Water Storage Tank
CAP	Corrective Action Process
CCR	Configuration Change Request
CFR	Code of Federal Regulations
DC	Direct Current
DRS	Division of Reactor Safety
ECD	Engineering Change Document
EER	Engineering Evaluation Request
EFW	Emergency Feedwater
EQ	Environmental Qualification
ES	Engineered Safeguards
ESAS	Engineered Safeguards Actuation System
GPUN	General Public Utilities Nuclear
IR	Inspection Report
IST	In-Service Testing
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MUT	Makeup Tank
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
NSRW	Nuclear Service River Water
PDR	Public Document Room
PERR	Public Electronic Reading Room
PFU	Plant FSAR Update
PI	Performance Indicator
RCP	Reactor Coolant Pump
RPS	Reactor Protection System
SDP	Significance Determination Process
SE	Safety Evaluation
TDR	Technical Data Report
TMI	Three Mile Island, Unit 1
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report

## ATTACHMENT 1

### NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
<ul style="list-style-type: none"><li>• Initiating Events</li><li>• Mitigating Systems</li><li>• Barrier Integrity</li><li>• Emergency Preparedness</li></ul>	<ul style="list-style-type: none"><li>• Occupational</li><li>• Public</li></ul>	<ul style="list-style-type: none"><li>• Physical Protection</li></ul>

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for

inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.